

## PCT REQUEST

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0	For receiving Office use only International Application No.	
0-1		
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	Form - PCT/RO/101 PCT Request	
0-4-1	Prepared using	<b>PCT-EASY Version 2.91 (updated 01.07.2000)</b>
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	<b>Swedish Patent Office (RO/SE)</b>
0-7	Applicant's or agent's file reference	<b>000008PC2</b>
I	Title of invention	<b>EFFICIENT SPECTRAL ENVELOPE CODING USING VARIABLE TIME/FREQUENCY RESOLUTION AND TIME/FREQUENCY SWITCHING.</b>
II	Applicant	
II-1	This person is:	applicant and inventor
II-2	Applicant for	all designated States
II-4	Name (LAST, First)	LILJERYD, Lars Gustaf
II-5	Address:	Vintervägen 19 S-171 34 SOLNA Sweden
II-6	State of nationality	SE
II-7	State of residence	SE
III-1	Applicant and/or inventor	
III-1-1	This person is:	applicant and inventor
III-1-2	Applicant for	US only
III-1-4	Name (LAST, First)	KJÖRLING, Kristofer
III-1-5	Address:	Lostigen 10 S-170 75 SOLNA Sweden
III-1-6	State of nationality	SE
III-1-7	State of residence	SE

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III-2	Applicant and/or inventor	
III-2-1	This person is:	applicant and inventor
III-2-2	Applicant for	US only
III-2-4	Name (LAST, First)	EKSTRAND, Per
III-2-5	Address:	Renstiernas gata 29
		S-116 31 STOCKHOLM
		Sweden
III-2-6	State of nationality	SE
III-2-7	State of residence	SE
III-3	Applicant and/or inventor	
III-3-1	This person is:	applicant and inventor
III-3-2	Applicant for	US only
III-3-4	Name (LAST, First)	HENN, Fredrik
III-3-5	Address:	Ritarvägen 14
		S-168 31 BROMMA
		Sweden
III-3-6	State of nationality	SE
III-3-7	State of residence	SE
IV-1	Agent or common representative; or address for correspondence	
	The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name (LAST, First)	ÖRTENBLAD, Bertil
IV-1-2	Address:	Noréns Patentbyrå AB Box 10198 S-100 55 STOCKHOLM Sweden
IV-1-3	Telephone No.	+46 8 545 874 00
IV-1-4	Facsimile No.	+46 8 545 874 29
IV-1-5	e-mail	norens@norenspat.se
IV-2	Additional agent(s)	agent
IV-2-1	Name (LAST, First)	KARLSTRÖM, Lennart
IV-2-2	Address:	Box 10198 S-100 55 STOCKHOLM Sweden
IV-2-3	Telephone No.	+46 8 545 874 00
IV-2-4	Facsimile No.	+46 8 545 874 29
IV-2-5	e-mail	norens@norenspat.se

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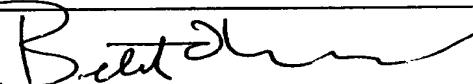
000008PC2

V	<b>Designation of States</b>	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	<p><b>AP: GH GM KE LS MW MZ SD SL SZ TZ UG ZW</b>  <b>and any other State which is a Contracting State of the Harare Protocol and of the PCT</b></p> <p><b>EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT</b></p> <p><b>EP: AT BE CH&amp;LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT</b></p> <p><b>OA: BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT</b></p>
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	<p><b>AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH&amp;LI CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW</b></p>
V-5	<b>Precautionary Designation Statement</b> In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.	
V-6	<b>Exclusion(s) from precautionary designations</b>	<b>NONE</b>
VI-1	<b>Priority claim of earlier national application</b>	
VI-1-1	Filing date	<b>01 October 1999 (01.10.1999)</b>
VI-1-2	Number	<b>9903552-9</b>
VI-1-3	Country	<b>SE</b>
VI-2	<b>Priority claim of earlier international application</b>	
VI-2-1	Filing date	<b>26 January 2000 (26.01.2000)</b>
VI-2-2	Number	<b>PCT/SE00/00158</b>
VI-2-3	PCT receiving Office	<b>SE</b>

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VI-3	Priority document request The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI-1, VI-2	
VII-1	International Searching Authority Chosen	Swedish Patent Office (ISA/SE)	
VII-2	Request to use results of earlier search; reference to that search		
VII-2-1	Date	19 July 2000 (19.07.2000)	
VII-2-2	Number	PCT/SE00/00158	
VII-2-3	Country (or regional Office)	SE	
VIII	Check list	number of sheets	electronic file(s) attached
VIII-1	Request	4	-
VIII-2	Description	10	-
VIII-3	Claims	2	-
VIII-4	Abstract	1	000008pc2.abs.txt
VIII-5	Drawings	6	-
VIII-7	TOTAL	23	
VIII-8	Accompanying items	paper document(s) attached	electronic file(s) attached
VIII-16	Fee calculation sheet	✓	-
VIII-16	PCT-EASY diskette	-	diskette
VIII-18	Figure of the drawings which should accompany the abstract		
VIII-19	Language of filing of the international application	English	
IX-1	Signature of applicant or agent		
IX-1-1	Name (LAST, First)	ÖRTENBLAD, Bertil	

## FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/SE
10-6	Transmittal of search copy delayed until search fee is paid	

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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : <b>G10L 19/00</b>		A2	(11) International Publication Number: <b>WO 00/45378</b>
			(43) International Publication Date: 3 August 2000 (03.08.00)
<p>(21) International Application Number: PCT/SE00/00158</p> <p>(22) International Filing Date: 26 January 2000 (26.01.00)</p> <p>(30) Priority Data: 9900256-0 27 January 1999 (27.01.99) SE 9903552-9 1 October 1999 (01.10.99) SE</p> <p>(71)(72) Applicant and Inventor: LILJERYD, Lars, Gustaf [SE/SE]; Vintervägen 19, S-171 34 Solna (SE).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (for US only): KJÖRLING, Kristofer [SE/SE]; Lostigen 10, S-170 75 Solna (SE). EKSTRAND, Per [SE/SE]; Renstiernas Gata 29, S-116 31 Stockholm (SE). HENN, Fredrik [SE/SE]; Ritarvägen 14, S-168 31 Bromma (SE).</p> <p>(74) Agents: ÖRTENBLAD, Bertil et al.; Noréns Patentbyrå AB, Box 10198, S-100 55 Stockholm (SE).</p>			<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published Without international search report and to be republished upon receipt of that report.</p>
<p>(54) Title: EFFICIENT SPECTRAL ENVELOPE CODING USING VARIABLE TIME/FREQUENCY RESOLUTION AND TIME/FREQUENCY SWITCHING</p>			
<p>(57) Abstract</p> <p>The present invention provides a new method and an apparatus for spectral envelope encoding. The invention teaches how to perform and signal compactly a time/frequency mapping of the envelope representation, and further, encode the spectral envelope data efficiently using adaptive time/frequency directional coding. The method is applicable to both natural audio coding and speech coding systems and is especially suited for coders using SBR [WO 98/57436] and other high frequency reconstruction methods.</p>			

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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> : <b>G10L 19/00</b>		A3	(11) International Publication Number: <b>WO 00/45378</b>
			(43) International Publication Date: <b>3 August 2000 (03.08.00)</b>
(21) International Application Number: <b>PCT/SE00/00158</b>		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: <b>26 January 2000 (26.01.00)</b>			
(30) Priority Data: 9900256-0 27 January 1999 (27.01.99) SE 9903552-9 1 October 1999 (01.10.99) SE			
(71)(72) Applicant and Inventor: <b>LILJERYD, Lars, Gustaf</b> [SE/SE]; Vintervägen 19, S-171 34 Solna (SE).			
(72) Inventors; and			
(75) Inventors/Applicants (for US only): <b>KJÖRLING, Kristofer</b> [SE/SE]; Lostigen 10, S-170 75 Solna (SE). <b>EKSTRAND,</b> Per [SE/SE]; Renstiernas Gata 29, S-116 31 Stockholm (SE). <b>HENN</b> Fredrik [SE/SE]; Ritarvägen 14, S-168 31 Bromma (SE).			
(74) Agents: <b>ÖRTENBLAD, Bertil et al.</b> ; Noréns Patentbyrå AB, Box 10198, S-100 55 Stockholm (SE).			
<p><b>(54) Title:</b> EFFICIENT SPECTRAL ENVELOPE CODING USING VARIABLE TIME/FREQUENCY RESOLUTION AND TIME/FREQUENCY SWITCHING</p>			
<p><b>(57) Abstract</b></p> <p>The present invention provides a new method and an apparatus for spectral envelope encoding. The invention teaches how to perform and signal compactly a time/frequency mapping of the envelope representation, and further, encode the spectral envelope data efficiently using adaptive time/frequency directional coding. The method is applicable to both natural audio coding and speech coding systems and is especially suited for coders using SBR [WO 98/57436] and other high frequency reconstruction methods.</p>			

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00158

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G10L 19/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G10L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PRINCEN, J. ET AL "Audio coding with signal adaptive filterbanks" In: 1995 International Conference on Acoustics, Speech and Signal Processing, ICASSP-95, vol. 5, pages 3071 - 3074, see the whole document --	1-16
X	US 5852806 A (JAMES DAVID JOHNSTON ET AL), 22 December 1998 (22.12.98), column 2, line 3 - column 3, line 4; column 4, line 15 - column 6, line 7 --	1-16

 Further documents are listed in the continuation of Box C. See patent family annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

12 July 2000

Date of mailing of the international search report

19-07-2000

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00158

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BOSI, M. ET AL "Time versus Frequency Resolution in a Low-Rate, High Quality Audio Transform Coder" In: 1991 IEEE ASSP Workshop on Applications of Signal Processing to Audio and Acoustics, Final Program and Paper Summaries, pages 0_81 - 0_82, see the whole document	1-16
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A	US 5581653 A (CRAIG C. TODD), 3 December 1996 (03.12.96), column 4, line 19 - column 5, line 6, abstract	1-16
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A	US 5737718 A (KYOYA TSUTSUI), 7 April 1998 (07.04.98), column 3, line 8 - column 4, line 63	1-16
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A	WO 98/57436 A2 (LILJERYD, LARS GUSTAF), 17 December 1998 (17.12.98), column 2, line 18 - column 5, line 10, abstract	1-16
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A	US 5504832 A (TETSU TAGUCHI), 2 April 1996 (02.04.96), column 1, line 65 - column 4, line 7	1-16
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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

02/12/99

International application No.	
PCT/SE 00/00158	

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5852806 A	22/12/98	CA 2199070 A EP 0797313 A JP 10039897 A	19/09/97 24/09/97 13/02/98
US 5581653 A	03/12/96	AT 147910 T AU 685505 B AU 7676594 A CA 2167527 A DE 69401517 D,T DK 716787 T EP 0716787 A,B SE 0716787 T3 ES 2097061 T JP 9502314 T SG 48278 A WO 9506984 A	15/02/97 22/01/98 22/03/95 09/03/95 12/06/97 23/06/97 19/06/96 16/03/97 04/03/97 17/04/98 09/03/95
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WO 98/57436 A2	17/12/98	NONE	
US 5504832 A	02/04/96	AU 657184 B AU 3019692 A CA 2085384 A,C CA 2193345 A JP 5173599 A	02/03/95 01/07/93 25/06/93 25/06/93 13/07/93